IN THE KANSAS WHEAT FIELDS

WONDERS OF THE UP-TO-DATE THRESHING OUTFIT.

Automobiles of the Plains That Take Along With Them Houses on Wheels, Coal and Water Wagons and Separators—A Hundred Million Bushel Crop to Handle

HAYS CITY, Kan., July 18.—This is threshing time in the wheat belt. Harvest is practically over. Since June 20, when the reapers began to buzz on the lower side of Oklahoma, the rush has been on.

The work has been rushed day and night. The farmers in some places wanted to use the self-binders and wagons all the time, so they hired two sets of men and two sets of horses. One shift went on at 7 in the morning and worked until 6 in the evening; then the other worked until morning.

The latter, when darkness came, hung lanterns on the harness of the horses and on the machines, then went on with the cutting. Full moon came during harvest this year and helped out wonderfully. So the farms were quickly sheared of their golden fleece.

The merriest of the laborers were the college boys who sought the harvest fields by hundreds. Fresh from the class room they went among the sheaves, donning blue overalls and wide straw hats costing 10 cents each at the country stores. After the day's work was over they sang college songs and made love to the farmers' daughters.

Now for the threshing comes the automobile of the plains. It is a huge clumsy affair, with wheels six feet high and tires 15 inches across, a canopy over the long boiler and a platform in the rear, where stands the blue-clothed chauffeur. He guides the machine with a wheel like his city cousin and he toots his warning whistle with as keen a delight in the antics of the country horses.

But what a train he takes behind him! The other day a traction engine and its equipment went through the streets of Kansas City. Where it came from nobody knows—or why it was so far from the grain fields could not be told. But 500 people gazed in wonder at the strange procession.

This sort of thing is common here, and often in the still prairie night the hoot and roar of its passing awakes the population. This is its equipment: First, the huge, lumbering engine from whose smokestack pours a roll of black soft-coal defilement; next an odd-shaped teetering coal wagon on two wheels; then a towering separator, or threshing machine, big, red and rattling; behind this a house on wheels; then a water wagon and last a buggy, in which slowly rides the proprietor of the outfit, so to speak, in his private car attached to the rear of the train.

"Something to be proud of, ain't it?" said Tom Whitney as he halted the train at the foot of a hill while the engineer raised the steam pressure higher in the gauge preparatory to the climb. "I've been workin' ten years to get this together. Cost me $3,000—$1,800 for the engine and separator and the balance for extrys. I've got ten good men in that there cook shanty and a cook who can beat th' band. If I don't make money this year it ain't my fault."

He will make money all right—all the threshers will this year. They have a trust, a combine, a "community of interest."

All through the spring they have been holding meetings behind closed doors in the country towns, arranging for the coming of the harvest. Heretofore every farmer has made his own contract with the thresher and every thresher has charged what he pleased. As a result some made only trifling wages; others lost money.

Practically every thresher in the West now belongs to the Thresherman's Protective Union, and a schedule of prices is fixed from which the farmer cannot escape if he hires one of the threshing outfits. It ranges from four cents a bushel, when the farmer furnishes and boards the hands, to seven cents when the thresher does it all. The latter is the common and popular way. It means ease for the farmer's family and better times for the crew.

Out against an osage orange hedge on the Cooper place was set the cook shanty. It is a great oblong kitchen on wheels. The outside is painted red, and a long window extends from front to rear, its upward opening forming a screen from the fierce sun.

Down the middle of the floor inside are two wide boards on saw-horses, the threshers' table. A white cloth is spread over it and long benches on either side make the seats.

The mistress of the cook shanty stands near the oil stove at the further end, a picturesque figure in her clean blue calico with elbow sleeves and wind-tossed hair. She rings a bell and the lunch time rush begins.

The buzz of the machine stops; the smoke dies down from the engine; a long, shrill whistle sends its echoes to neighboring farms where it is answered by other whistles as clear and loud and shrill. Down from the stacks tumble the tired and dusty men. Off the loads of wheat come the boys. The horses are quickly fed, a hasty wash at the water wagon and then the gathering at the cook shanty.

It is an odd assembly that congregates around the pine board table. There is the gray-haired man who has failed at farming and now works for others, the boy who has never before been in the country, the half dozen young men, all more or less in love with the cook; the jolly boss whose smooth, sun-burned face wrinkles with perpetual smiles.

Before them is set an array of heaped-up bread and butter, roast beef, cabbage, cheese, creamery butter and coffee, that would make an expensive meal at a first-class restaurant. And they do it justice. They clean up their plates. It is no fun pitching straw all day, and there is no better appetizer on earth than a position at the business end of a wind stacker.

"It was a straw-stacker in my boy days back in western New York," said the boss, as he showed the workings of his handsome machine.

The new method is better than the old. On the former an endless belt with slats across carried the straw up an incline and two boys were kept busy pushing it away.

The modern machine has a long zinc or iron tube like a huge telescope. At its base is a fan which is kept in motion and sends a blast up the tube carrying straw and dust with it—hence "wind stacker."

The man at the bottom guides the pipe, pointing its end in various directions so as to make a perfect stack. It accomplishes this, too.

In other ways is there great change in the modern threshing methods. The old-time farmer stood beside the machine and caught the grain that flowed in a red-brown stream in a half bushel measure. Then he lifted it to his wagon and kept the tally on a board.

The modern machine takes the wheat as it comes from the cylinder, cleans it, puts it in a tube high above the top of the machine, weighs and measures it, then lets it run into the wagon. There is no more of the tedious fanning-mill process that tired out the boy of the earlier generation.

Nor is there a band cutter at the start of the machine's work. A self-feeder attachment does all that, and from the minute that the bundles, tied in twine by self-binders, are pitched at the gaping mouth of the separator until the farmer drives to the elevator with his load of clean wheat, leaving the straw behind, the hand of man has not been called into use. The machine does it all.

But the new method has one danger that was foreign to the earlier days—fire. When the old horse power was in vogue nobody ever heard of a wheat field fire, but now, with the traction engines and the carrying of coals across the dry stubble, the matter becomes serious.

Sometimes while the crew is eating in the cook shanty there comes from the field where the panting engine has been left standing a cloud of smoke. One day when Carl Hapner was driving an engine out in Ellis county there was a sudden alarm of this kind.

Down by the stacks were his fine separator and engine and he ran bareheaded to the smoking, burning stack to save them. Into the cloud he ran and leaped on the footboard of the engine.

"Get ready and couple her," he called to his foreman, a Swede, who was waiting in wonder.

The fireman obeyed and pulled off the belt. The fire, which had started from the engine, was now sweeping up the side of the stacks, but Carl shoved the lever, and the huge black machine turned and twisted and backed until it was just in front of the separator.

"All right," called the fireman, and away went Carl.

The smoking machine swayed and rumbled behind his hurrying automobile of the plains—but it came, nevertheless, and he rode triumphantly out of the field while the flames ate up 8,000 bushels of grain that the farmer had worked a year to raise.

Out in Ellis county were raised 2,000,000 bushels of winter wheat this year. The first acre of wheat ever produced in the county was in 1876, when Hill Wilson, now of Topeka, put in ten acres. It was sod wheat, but it did well and when it was ripe he wondered how he would be able to cut it.

Not a reaper could be found within sixty miles. Near him was a colony of Russians and he received a call from their leader.

"I will cut your wheat," said he, "for $2 an acre."

It was all the wheat was worth, but Mr. Wilson had to agree. The Russian brought all the women of the colony to the farm and with hand sickles they cut the grain while in their arms and aprons they carried it to the little granary.

To-day Ellis county uses 2,000 extra laborers to cut the wheat its soil grows. With such a development in what was once an arid country is it any wonder that the farmers prosper?

It costs $8 to plant, harvest and market an acre of grain. This year Ellis county will sell $1,200,000 worth of grain that cost only $800,000 to raise. This means $400,000 profit for 5,000 people, or $80 for every man, woman and child in the county. That is the way a wheat crop counts out West.

The threshers who are making themselves well to do out of the present wheat crop have invested only about $1,800 on an average. If they can thresh 1,000 bushels of wheat a day for fifty days they will pay for their machine and outfit. Next year they will make an equal amount, for the Kansas wheat crop shows no indication of diminishing. This is the remarkable record of the past decade:

Year.	*Bushels.*
1890	28,801,214
1891	58,550,653
1892	74,538,906
1893	24,827,523
1894	28,205,700
1895	16,001,060
1896	27,754,888
1897	51,026,604
1898	60,790,661
1899	43,687,013
1900	77,339,091
1901	90,333,095
1902	45,827,495
1903	100,000,000

The work of planting, cutting and threshing this great harvest is becoming more interesting every year, and the final task of getting it to market is more puzzling each autumn. This fall there will be hundreds of thousands of bushels heaped on the ground under the open sky for weeks at a time because of the inability of the shippers to secure cars.

Last fall a New York buyer came West to look for wheat. At one place he approached the station and wonderingly asked his driver:

"Circus in town?"

"No, hain't been a circus here in three years."

"What do those tents mean then?"

"Wheat, sir. There's wheat under all of 'em."

The dealers, unable to handle the large amounts of wheat coming in from the farms, had the farmers heap the grain on the open sod and then, securing some circus tents, placed them above the great red piles to prevent the damage that rain or hail might do.

So it will be in a few weeks from now, for the prairie railroads' facilities will be totally inadequate to handle the crop, which has exceeded all anticipations, and will make a round hundred million bushels, the largest yield of the State.

MIND-READING DOG DEAD.

Bozzie II. Had Been to the White House to Entertain the President.

From the Chicago Daily News.

Bozzie II., the "mind-reading" collie that barked President Roosevelt's age, is dead. She passed away at the home of her owner, George B. Clason, 50 Bryant avenue. A son of Bozzie II. is owned by Kermit Roosevelt.

Bozzie II. has been voted the most versatile dog in the world. Scientists who have made her a special study, statesmen and diplomats before whom she has performed, united in singing her praises, though the scientists were forced to admit that they could not make her acute faculties conform to any of their theories regarding the mental acumen of animals. A professor of Columbia University spent a whole week with Bozzie II. about a year ago, and was forced to admit that she had reasoning faculties and deductive power, and her apparent proclivities for mind-reading he was completely at a loss to explain.

Bozzie's most baffling performance from the point of view of the scientists was that of telling the ages of visitors to her master's home. The visitor would be told to think of his age and directly Bozzie would begin to bark, making a sound for each year the man had lived. She was never known to be at fault. Besides this, she apparently possessed a mathematical faculty of being able to do difficult sums in addition, subtraction and even division without hesitation and without making a mistake. If told to cross the street and pick out the fifth tree from the end of the block she would count the trees as she walked along, stopping and putting her paws against the right tree.

Bozzie II. was probably the only trick dog that was ever entertained in the White House, certainly the only canine that ever was allowed to "guess," if guessing it may be called, the President's age. Mr. and Mrs. Clason went to visit the President last year, taking the wonderful collie with them, and Bozzie on her first presentation to the Chief Executive told him his age to his face and then told Mrs. Roosevelt how old she was. The President and his family were delighted, and diplomats were invited to meet Bozzie.

When the Clasons returned home Mr. Clason received a letter from President Roosevelt thanking him for the treat of seeing Bozzie perform, saying that the collie was the "most wonderful and noteworthy dog he had ever seen." Mrs. Roosevelt sent Bozzie a collar on which was engraved: "Bozzie II., from Mrs. Theodore Roosevelt."

A WILDERNESS NEAR THE CITY.

CHARMS OF THE HINTERLAND OF THE HUDSON HIGHLANDS.

Nature Still Reigns There, Only Fifty Miles From New York—Little Known Beauties of Its Lakes, Forests and Mountains—Home of a Primitive Race.

Of the wilder and more rugged regions of this State the most accessible from the metropolis is what may be termed the hinterland of the Hudson Highlands. Strangely enough this region has long remained unknown to the large majority of New Yorkers who enjoy frequent summer outings into the country.

This Highland region is bounded by a rough triangle whose apex is in New Jersey just beyond the Ramapo Pass and whose base is the Hudson between Cornwall and Jones Point. It contains about forty mountain lakes within a radius of ten miles, and an almost unbroken forest covering.

Hedged in though it is by such places as the United States Military Academy at West Point, Tuxedo Park, many large estates, and a string of popular summer resorts, the Highland country has thus far remained unspoiled. One can easily get lost in its woods. The visitor can climb its hills and look over wide stretches of more hills; and he can walk all day in one direction without crossing any highway better than a woods road.

Many interesting days' trips may be taken into the interior west of the river, entering the mountains from Fort Montgomery, West Point or Cornwall or from any of the Erie railroad stations between Ramapo and Mountainville. There is as yet no accurate map of the country, although the United States Geological Survey is about to publish the results of its work there. The completion of the map has been delayed long after the surrounding districts had been plotted, on account of the impossibility of rapid work in so rough a section.

A good county map will give the explorer a fair idea of the main roads, which mostly follow the mountain cloves, but many of the crossroads have become overgrown and in a few cases they have become almost obliterated by the forest growth.

The timber throughout this region averages about fifty years old, with newer wood in scattered tracts, and several stretches of virgin timber. One of the last is on Cro' Nest, on the West Point reservation.

Another is beyond the Ramapo, and here, in a wonderfully wild country, there lives a primitive race descended from the Indians and negro slaves who escaped before the Revolution. These people have intermarried again and again, and among them are a number of almost pure albinos.

They live almost entirely on the proceeds of berries and small game, and the sale of baskets, which they make themselves. They are shy and suspicious of strangers, and seldom come down into the towns.

Of the lakes one of the most interesting is Popolo Lake, two miles long, with many points and islands and unusually picturesque hills. It is about 700 feet above the sea level, and its scenery resembles that of the higher Adirondacks. At its head a mountain stream enters the lake under a natural bridge, over which passes an old road.

Well up on the side of North Mountain, which rises from the western bank and from which one can see eight lakes, lies Wood Lake. Three miles to the eastward there is a similar placing of lakes, where Long and Round ponds, distant from each other only a few hundred yards, have a difference in elevation of about five hundred feet with a precipitous cliff between. Viewed from the side of the mountain they look like silver balance scales.

Further west again is a string of half a dozen lakes, each surrounded by its wooded hills. Of the more solitary lakes unquestionably the most charming is Sutherland Pond.

Lying under the shadow of Mount Rosecal and Black Rock in one of the most secluded parts of the range, reached only after an hour's hard walking and climbing over wild trails. One needs a guide to find it, but the climber, as he scrambles down the face of the mountain, and looks out on the lake from the fine cliff which rises from its shore, will feel himself well repaid for his labor. Sutherland Pond is almost hidden among the hills which enclose it, and the explorer who stumbles upon it will have to build a raft if he wants to take a sail, for there is no boat there.

Two miles from Sutherland Pond is one of the series of ascending rock formations peculiar to the Highlands, upon the face of which is an Old Man of the Mountain which will become famous when the country is better known. It can be seen for miles, hanging sheer above the tree tops several hundred feet below it.

This point is typical of many others in the Highlands and commands one of the finest views to be had, being almost the highest point in the range. The Highland peaks along the river seem far below it. The sweep of the vision here is a circle of nearly 100 miles in diameter.

On the north one can see the Catskills, fifty miles distant; on the east the green hills of Connecticut and Mount Everett in Massachusetts; on the south the upper extension of the Hackensack meadows, and on the west Mount Adam and Mount Eve at Warwick. One can also see the hills about Port Jervis, so that the gaze rests on five States.

But the finest views are in the foreground, over the forests and lakes which make this country seem like a smaller edition of the North Woods. It has the rock mosses and precipices of the Adirondacks rather than the comparatively gentle slopes of the Catskills, carrying far inland the stern character of the southern sides of Storm King, Cro' Nest and the other river hills. Indeed, the Highlands are, geologically, related to the Adirondacks, and scientists tell us that the two regions were among the first parts of the North American continent to rise above the waters.

There is much of human interest, too, in these hills, for all their wildness. In Papolo Clove, far depressed below Bear Mountain, are the Forest of Dean iron mines, temporarily closed, which extend 1,800 feet into the magnetite ore bed, and burrow nearly a thousand feet below the surface. They have been worked almost continuously since 1760, and ore for one of the Revolutionary chains which obstructed the Hudson was taken from here and carried on donkey back over the range to Deacon Brewster's forge on Murderer's Creek, now called the Moodna, at Cornwall.

Just outside the Highland triangle, too, is the Sterling mine, of still earlier beginning, and at Greenwood, now Arden, are the ruined furnaces which smelted ore taken from Highland mines, and used to form the famous Parrott cannon of the civil war.

All through these mountains, in some of the wildest glens, one is continually discovering the water-filled shafts of old mines, for there were once dreams of wealth in these hills. The State Geologist reports them to be rich in ore, but generally the process of extraction is too expensive to compete with other mines in which the beds are broader.

Before the days of the railroad the stage coaches crossed this range. Now the old post road is a mountain gully in places, on which the forest encroaches. An occasional mound of stone marks the site of a house.

More than one highway has long since had the track of the wheel replaced by the growing scrub-oak and the sweet-fern, and nearly everywhere, especially toward the Hudson River, down to the narrow fringe where fashion reigns under the river hills, the Highland country has grown wilder, as the metropolis fifty miles away has been throwing toward it an advance guard of suburbs and summer homes.

Down near the river, in the romantic clove between Storm King and Cro' Nest, sleeps a little graveyard, under the shade of trees over a hundred years old. Here are graves of persons buried late in the eighteenth century. There is one of a little child. Under another stone lies the body of a young girl of 17. The sleep of the little forgotten cemetery seems typical of the long sleep of the mountains.

The awakening, however, is already at hand. There is talk of a trolley road from Tuxedo across the range to West Point. Then the New Yorker will awaken to the great pleasure ground at his doors. But to the lover of unspoiled nature the great charm of the Hudson hinterland will be gone.

AN OLD SEA GREYHOUND.

Not in the Morgue Yet by a Great Deal—And She Has a Skipper to Be Proud Of.

"Hard times the old sea greyhounds fall upon in their old age," a sailorman said, looking over the morgue in the Erie Basin.

There is an old-timer in port now, not a very speedy one, but, reconstructed, good for many years yet. She came into port though under very different conditions from those under which she left it, 'way back in '64.

Then the Clara Clarita was new and strong and swift as the best of 'em. They built her over in Brooklyn to help the Union naval commanders in catching blockade runners, and she sailed out then, long and narrow and slick, in gray paint, to join the fleet in Southern waters. But the war was almost over then and there wasn't much for her to do.

After peace was proclaimed she wasn't needed, so they sold her and for years she was a trim pleasure yacht in Southern waters. She passed from hand to hand and next she did duty as a swift passage carrier between Vinalhaven and Rockland in Penobscot Bay up in Maine.

She put in many years at that work. Then she became too old for that job, was condemned, sold, rebuilt and Capt. Alfred Sorensen got her. With new and stronger engines in her, he made a towboat of her.

Last week she came back to New York harbor, a trifle battered and in a coat of dark paint, more than a trifle shabbier than when she sailed away in the old days nearly forty years ago. She hauled in a clumsy, bluff-bowed craft, a relic like herself. It was once a ferryboat in Boston harbor and now, stripped of its engines, is called a lighter.

The two brought from Maine two of the 150-ton pillars which are to be set up in the sanctuary arch of the new Protestant Episcopal Cathedral. Now they have departed to bring the rest.

It takes stout craft to bring down a dangerous coast a costly and risky freight like this, but they don't risk the new ones in the job. It is a work for old-timers, and maybe the ex-greyhound and passenger boats felt the degradation of their fall from high estate.

But then the Clara Clarita could find comfort in her owner and captain. He is an old sea dog, too, and three times Congress has honored him for life saving.

Nine years ago Capt. Sorensen dived overboard in his clothes and fought a rough sea off Minot's Light for the life of an amateur fisherman who had gone over the side when he could hardly swim in calm water. He swam 150 yards with the dazed fisherman before they fished the pair out. Secretary Carlisle sent the captain the Congressional gold medal of honor for that.

A gold bar was added to the medal last November for a second brave rescue, made in Boston harbor two years before, when the captain was master of the steamer Philadelphia. The people on the Philadelphia gave him a gold watch, too, as a reminder of that feat.

Then last year Capt. Sorensen earned third honors. This time the Standard Oil steamer Astral had gone ashore off Mount Desert Rock in a December gale. Her crew of seventeen were left clinging to the wreck, over which the seas washed continually. A revenue cutter tried to get to the wreck, but was beaten back and had to give it up.

On the fourth day Capt. Sorensen and a volunteer crew did what the revenue cutter had failed in. They got to the wreck in a dory, and in three trips took off all of the seventeen men. One died of exposure afterward, and all of the rest were badly frostbitten, but the captain has the sixteen lives to his credit.

He is able and willing to try just such another feat, and he backs the Clara Clarita to buck any sea that a new harbor tug dare tackle. So the old-timers haven't lost any of their spunk, if the days of their gay and buoyant youth are past.

OPERA AT A SUPPER TABLE.

A Time When Jean de Reszke and Nordica Sang to Please a Friend.

Hermann Klein in the Century.

I had hoped, before my return to England, to hear both "Lohengrin" and "Tristan" in German, but, as it turned out, I could not remain for the latter. But my self-denial was first to receive compensation in the shape of a very rare, if not unparalleled, compliment.

It was arranged that we were all to sup together in Mme. Nordica's apartments at her hotel after the performance of "Lohengrin." Our hostess was, indeed, the heroine, in a special sense, of that representation; for after the bridal scene she was presented with a superb diamond tiara, which had been subscribed for by the leaders of New York society.

It was the first time I ever saw the Metropolitan Opera House, and I was much struck with its handsome proportions. Then, again, under Anton Seidl's magic wand, the performance touched at all points a very high level of excellence. Finally, I derived immense pleasure from the novel sensation of hearing Jean and Edouard de Reszke as exponents of Wagner's own text. Their conscientious enunciation of each syllable, their accurate diction, and their admirable accent seemed to impart an added dignity alike to the music and to their impersonations. Mme. Nordica, too, handled the German words with remarkable facility and confidence. Altogether, it was a most meritorious achievement.

The subsequent reunion at the hotel found every one in the highest spirits. Besides the three artists, there were present Mme. Nordica's sister, Mrs. Walker, and Amherst Webber, the talented English *maestro al piano*, who had recently acted as accompanist to the brothers in their Wagnerian studies.

After supper the conversation turned upon Bayreuth, and reference was made to a certain half promise given by Jean de Reszke to Frau Cosima that he would one day sing "Tristan" and "Walther," or perhaps even "Siegfried," at the festival. I remarked that, after what I had heard that night, I entertained no doubts concerning the adequate quality of his accent.

Then the distinguished tenor turned to Mme. Nordica and proposed that, as I was evidently not to be made to alter my determination to leave before the production of "Tristan," the best thing they could do would be to "bring the mountain to Mohammed" and sing some "Tristan" to me there and then; and that between 1 and 2 in the morning, and after a heavy opera like "Lohengrin"! Surely it was not possible. But surprise and incredulity quickly changed to delight. For, without an instant's hesitation, Mme. Nordica consented; Mr. Webber went to the piano and played a few introductory bars; and, almost before I could realize what was being done, the two gifted artists were warbling the wondrous love scene from Wagner's immortal music-drama.

They did not spare themselves, either, these generous friends. They sang with full voice; they went through not only the scene with which they had started, but the duet of the first act as well; and, from beginning to end, the exquisite beauty of their phrasing, the blending of their voices in perfect intonation and unity of color, the significance of their supreme dramatic interpretation, constituted at once a marvel and a revelation. It was a strange experience, sitting at the supper table (for none of us but Mr. Webber had moved from our seats) while for an hour or more those two famous singers revelled in the enjoyment of their self-imposed task, undertaken for the sole purpose of conferring pleasure upon an old friend.

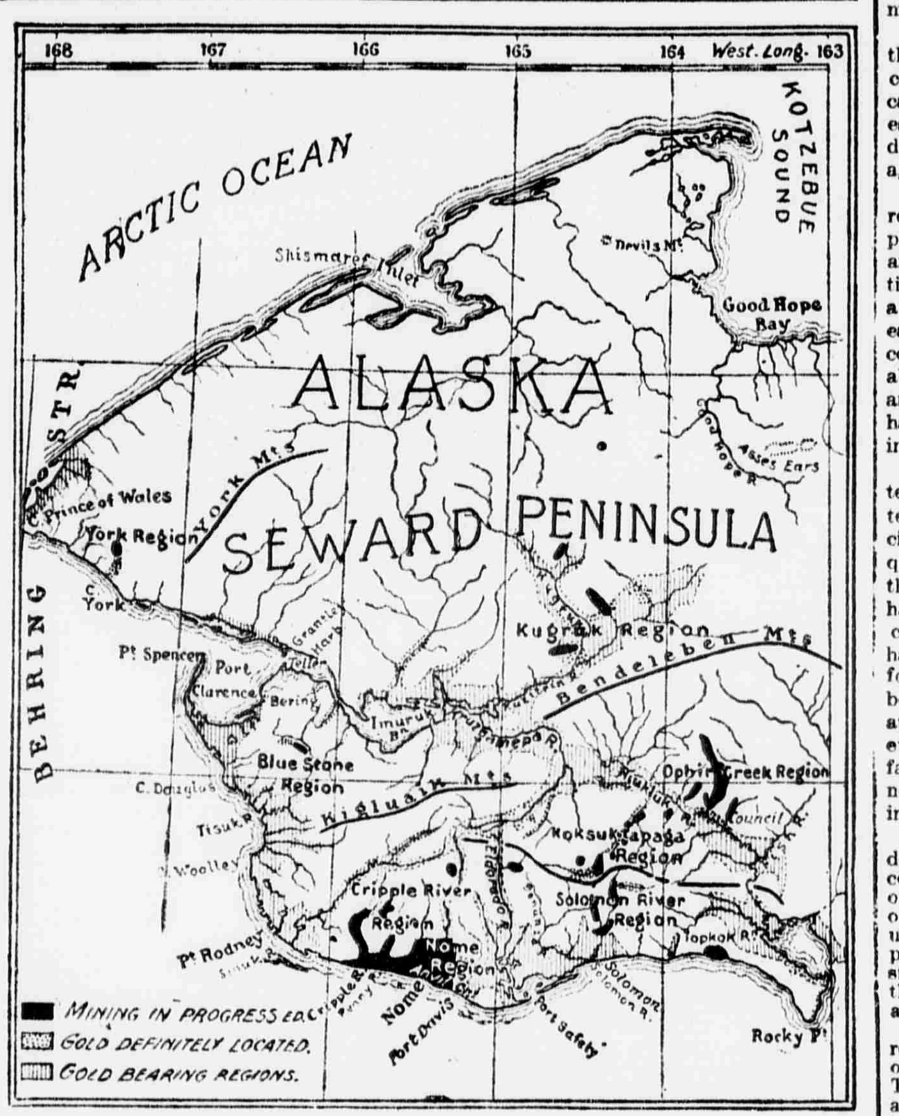
GOLD IN SEWARD PENINSULA.

PART OF ALASKA IN WHICH MOST PLACER MINING IS DONE.

Thousands of Miners at Work There With Pick, Shovel and Pan—Larger Output Expected This Year—Transportation Difficult—Great Area to Be Developed.

THE SUN published a map the other day showing the distribution of actual placer mining operations in Alaska during 1902. About eleven-twelfths of all the placer gold obtained in that year, or $5,500,000, was mined in the peninsula extending into Behring Sea, north of St. Michaels, which has been named the Seward Peninsula.

Because this little area is yielding at present nearly all the placer gold that is coming from Alaska another map has been prepared to show in detail the parts of the peninsula where thousands of miners are at work with pick, shovel and washing pan. The map here presented shows all the important locations in the peninsula where mining is in progress, and also the large area of placer grounds where it is believed there is plenty of pay dirt, though as yet only the most accessible mining districts are being developed.



PLACER GOLD REGIONS OF SEWARD PENINSULA.

Not long ago the beach at Nome, in the southwest corner of the peninsula, alone represented the mining industry in this district; but to-day mining is in progress on many of the streams and gulches in the interior of the peninsula, and though Nome is still the greatest producer, the other districts contribute a large amount of gold dust to the total output.

Though the yield last year was $5,500,000, it would have been much greater if it had not been for two distinct conditions. Very little rain fell in July and August, the height of the mining season, and hence but little sluicing could be done. The other cause which restricted the output was that a great deal of "dead work" was done in preparation for more extensive mining during the present season. Ditches were dug, pumping plants established, and other improvements made which are certain to increase the gold production.

The problem of transportation into the interior is still a serious one. After heavy machinery has been landed on Nome beach it is still a grave question how to transport it from the coast to the mines. This problem involves the building of roads and in some cases the dredging of rivers.

The problem has been solved for the Anvil Creek region, because a narrow gauge railroad now extends from Nome beach to the head of Anvil Creek. Roads have been extended from the railroad to adjacent creeks, so that it is possible to handle heavy machinery for the region tributary to Nome; but the problem has not yet been solved for the more isolated camps.

In 1902 gold mining was carried on in the Nome region proper, in the Solomon and Eldorado River region, on the streams tributary from the south to the Kruzgamepa, in the Kuzitrin basin and on the streams tributary to the Niukluk River. A number of the streams which are tributary to Port Clarence were also found to carry commercial value.

Some development of placers on streams flowing northward to the Arctic Ocean has been made. None of these northerly flowing streams has been found to be so rich as those of the southern districts. Many of them have produced gold in commercial quantities, and with further development will probably become important producers.

The large increase in the output of Ophir Creek, a northern tributary of the Niukluk, is of special interest. Its production in 1902 was over $1,000,000.

This stream was one of the first on which gold was discovered in the Seward Peninsula, and for several years was spasmodically worked; but it is only since the introduction of systematic methods of mining and extraction that Ophir Creek has become one of the largest producers of the region.

These facts augur well for the future of the Seward Peninsula placer fields. It is believed that other streams will have a history similar to that of Ophir Creek.

In nearly every case thus far the first work is done along the channels of the stream. When these are worked out the prospectors turn their attention to the benches and terraces, which often yield good returns.

In some cases, however, the miners neglect thoroughly to prospect the terraces and benches, and they have also abandoned placers which, in the opinion of members of the Geological Survey, may still carry gold in paying quantities.

In Anvil Creek last year the most important development was in the auriferous gravels of the benches, which are found on both sides of the valley. This gave a new impetus to mining.

The high-bench gravels from 500 to 800 feet above the sea were discovered in 1900 and are still in process of development. Some of them have great depth and the extraction of the gold involves much labor.

The tundra, or coastal plain, placers back of Nome are still worked, but their development is not yet commensurate with their probable importance. It is believed that the gravels of this coastal plain carry many workable placers.

They are a few feet above and below sea level, are mined through shallow trenches, and operations have been hampered by lack of facilities for handling the surface water. When an economic method of mining these gravels in a large way has been devised handsome profits will certainly be made.

Everything points to the probability that the greatest placer mining interests of Alaska may, for years to come, be centered in the Seward Peninsula; and it will not be surprising to hear at any time of most important developments in the regions shown on this map as gold producing, but in which little or no work has as yet been done.

THE ATHLETE'S HEART.

Statistics of Rowing Men Seem to Show That It's a Good Organ.

From the Philadelphia Record.

The many rowing contests which have occupied the country for the past month—the college regattas at Poughkeepsie and at New London and the two big open regattas here on the Schuylkill—have furnished a large number of cases of extreme exhaustion among the oarsmen at the finish of the races, and has brought into prominence the question, "Does not the rowing of races impose such an unnatural strain upon a man as to be harmful to his future health?"

A canvass was made of the men who have rowed in the University of Pennsylvania crews from 1877—the first crew—down to the present year, and the result, instead of showing an increased mortality among oarsmen, demonstrates that they are an uncommonly healthy set of men. Out of the 113 men who made up the Pennsylvania crews during the period, all but two are alive and in good health to-day. These two died of typhoid fever, and their deaths can be in no way attributed to rowing. These facts contradict any amount of theory regarding the harmful effects of rowing. Of the whole number of 113, nine have not been heard from for several years, but the Alumni Association is authority for the fact that they are still alive. Full particulars regarding all the others were easily ascertainable.

Aside from the two men who are dead, there are also two men who have some doubt as to whether rowing was a benefit to them, but all of the remaining men are still devotees of the sport, and a large part of them can be found annually at the boat races.

These two men who are not sure whether rowing did them any harm are E. I. Sterns and R. H. Eisenbrey. Sterns, in 1898, rowed in both the 'varsity and the freshman races, and in the fall he was taken down with appendicitis, which may have been caused by the unusual strain to which he was subjected, but the causes of the disease of the appendix are so vague in the minds of the doctors that it is an open question whether his case should be attributed to the oar. Eisenbrey was forced to quit this year on account of the weakness of his heart, which his physician claimed to have been due to the strain of rowing. Only one physician has as yet examined Eisenbrey, and it is by no means certain that his heart has been really affected.

Dr. Morgan, in 1873, made up statistics of the men who had taken part in the Oxford-Cambridge races from 1829 to 1869, and his results are about the same as those obtained from the University of Pennsylvania oarsmen. From a total of 294 oarsmen, 255 were still alive in 1873, and of these 115 described themselves as benefited, 162 as uninjured, and 17 said, with reservations, that they had been injured. Of these 17 cases all were found to have gone into races without the proper preliminary training, or to have rowed while they were recovering from illness, or were otherwise in poor health.

A prominent member of the faculty of the University of Pennsylvania medical school has made a study of the heart action of athletes. He has examined a large number of men in athletics, especially rowing men, and he has come to the conclusion that no man in perfect health, who has been properly trained is injured by rowing, but that on the contrary his heart is so strengthened that, with a moderate amount of exercise after he has finished his active rowing career, there is no reason, so far as the heart and lungs are concerned, that he should not live to a very old age.

"The heart," said he, "is both a very delicate and a very strong organ—that is if it is well developed it will stand an enormous amount of strain without any permanent injury, but if it is not well developed it is very easily weakened. Violent exercise, like rowing, places a great deal of strain on the heart, because when the body is being exerted, it requires so much more pressure to force the blood through the body. Like any other muscle that is worked, the heart under the added labor, becomes larger, and most athletes have extra large hearts, just as they also have larger muscles throughout the body.

"If the strain is put upon the heart suddenly it dilates—it becomes larger, but not more muscular—and that is the danger in athletics. If a man exercises gradually then his heart also increases in size gradually because the muscles become larger and this is a perfectly normal condition. It simply means that the athlete has a stronger heart than the average and one that can cope with the extra strain that is put upon it. A man needs a larger heart to row a race and if gradual exercise has so provided him with one then he can safely undergo the most severe tests.

"It is the same way with the lungs and they must be developed gradually until they can undertake the extra work. A man with his heart and lungs well developed is in no danger, no matter how hard the race. He may completely keel over at the end of the race, but it will likely be from sheer exhaustion and his heart is so strong that the effect is not at all injurious; he will be as good as ever in a few moments."

BACTERIA FREE FOR FARMERS

UNCLE SAM IS GOING HIS SEED DISTRIBUTION ONE BETTER.

Packages for Soil Inoculation to Aid in Growing Rich Crops to Be Sent Out Next Year—It Means Greatly Increased Values in Crops for the Future.

WASHINGTON, D. C., July 18.—The Government has in store for the farmers of the country an interesting gift. To many it will seem like magic. To others who have for a few years kept abreast of the subject of soil inoculation it will not seem so marvellous.

In 1885 a German scientist, Hellriegel, announced that he had discovered that there exist in the soil a vast number of minute microscopic organisms which make their homes in tubercles, or nodules, on the roots of leguminous plants, such as clovers, vetches, peas, beans and locust trees. These little creatures, he showed, perform a valuable service for the plants in which they live. They pay for their subsistence by catching from the air nitrogen which the legumes could not themselves take into their systems in gaseous form, reducing it to a nitrate in combination with some other element taken up from the ground, and the legumes easily digest this plant food and make rapid and luxuriant growth.

All this was taken up quickly by scientists throughout the world, and especially in this country. Hundreds of experiments were carried forward, and it is now fundamentally established that this is one of the greatest discoveries known to scientific and practical agriculture.

Nitrogen is the most expensive fertilizer required in farming. The average price per pound is 17 cents, while phosphorus and potash, the two other requisite fertilizers, are to be had for two and three cents a pound. On every square inch of the earth's surface there rests a column of air consisting largely of nitrogen and weighing about fourteen pounds. With this at hand, and with the means to catch it, the farmer has a most abundant source of the most important fertilizer he needs.

The way in which the Government intends to make use of these particular bacteria is by propagating them under artificial conditions and sending them out in small quantities in all parts of the country for the use of farmers. A large laboratory has been provided in Washington with a competent staff of bacteriologists who have already made nearly all preparations for the work proposed. In a small pasteboard box four inches by six and half an inch deep, they will be sent free wherever the United States mail goes, to the farmer who desires to introduce a leguminous crop hitherto impossible of culture in his region.

The box will contain three packages done up in tin foil. In one is a wad of cotton on which the cultures or germs of the bacteria have been dried and in the other two are nutrient salts which are usually magnesium sulphate, potassium phosphate or ammonium phosphate, with a small mixture of sugar to solidify and hold the cultures. A sheet of instructions and a franked envelope accompany the package.

The Department asks every farmer who receives cultures in this way to take notes on the result of his experiment and report. The instructions are simple and practically admit of no failure. Package No. 1 of the nutrient salts is first to be dissolved in a half gallon of pure water at ordinary temperature. The salts dissolve in a very few minutes. Then the wad of cotton is to be placed in the solution and left to stand for twenty-four hours and next the other package of nutrient salts is emptied into the solution. In another twenty-eight hours the cultures are ready for use. The solution, if no mishap has occurred, will have turned a milky cloudy white very much like the liquor of oysters.

There are two ways in which the cultures may be applied. The applicant must specify what particular variety of leguminous crops he desires to establish. It has been found that the bacteria common to certain families of legumes will not make their home on the roots of legumes of other families. For instance, the bacteria that subsist on the roots of alfalfa will not live on the roots of red clover. The bacteria on red clover, however, will inoculate white clover, crimson clover, alsike, buffalo clover and all of the trifolium clovers. The bacteria on bird clover, which is common in some parts of the country, will inoculate alfalfa. The bacteria of soy beans will work on cow peas and similar members of the bean family.

The first way of applying the cultures is to spread the seed out thinly on the table and sprinkle the solution over it; then, when dry, to sow as usual. The other way is to take a quantity of soil in a place out of the sunshine, sprinkle the solution over it, stir it up and scatter it broadcast over the ground to be seeded.

Successful inoculation can be secured by taking soil from a thrifty field of legumes such as alfalfa, clover or vetches and scattering it over the field where either of these crops may be desired. Owing to the cost of freight this is an expensive method, but it has been practised with success many times.

The experiment stations in Illinois and Ohio after years of failure to establish alfalfa sent out beyond the Missouri and secured quantities of soil from fine fields of alfalfa and then succeeded in making alfalfa grow. These stations have in turn supplied earth for inoculating purposes to farmers and other stations further east. This method is one which the individual farmer can use to advantage after he has once established a small area of any particular crop he desires.

Nearly everywhere east of the Missouri River farmers find that they cannot make alfalfa grow, though it is the most profitable forage crop known. Anywhere from ten to forty acres of it will yield a large income, whether sold as hay or fed to live stock. In the alkaline soils of the far West the bacteria multiply so rapidly and are so favored in the environment that alfalfa may be sowed anywhere successfully. But in the East, without inoculation the root tubercles do not form and the little alfalfa plants wither and die.

It will not be until next year that the Government will undertake to supply cultures generally. Accurate tests are now being made of all cultures employed and every safeguard will be taken to fulfil expectations. The Government has found a new method of producing the cultures in what is called a nitrogen-free medium and the process will not be patented so that the benefits may be enjoyed by the whole country without cost or favor.

It has been found that it is not so much the quantity of bacteria as the character which tells for success. If the cultures are fresh and virulent they perform their service more thoroughly and the returns are satisfactory. The amount sent out in the packages described are usually those required for a bushel of seed of the ordinary sort, such as clover or alfalfa; but the applicant may increase the quantity by increasing the amount of water and keeping a part of the solution over, very much as yeast may be increased by the housewife or the baker.

Grass being the money crop of the country, whether sold in hay or livestock, inoculation is expected to add untold millions to the grass and hay crop of the whole country.

Interborough Cars Now.

When the cars of the elevated railroad go into the shops nowadays for overhauling and repainting, they come out with the name "Interborough" painted on their sides instead of the long-familiar word "Manhattan."

There have already appeared on the elevated roads a number of newly-painted cars thus lettered. Although the fact that the elevated system has been leased to the Interborough is well known, the new name on the cars looks strange enough to attract attention whenever it is seen.